

 <b>CARLO GAVAZZI SPACE SpA</b>	<b>AMS02-PDS</b>	N° Doc: Doc N°: <b>PDS-PR-CGS-013</b>
	PDS-PFM VIBRATION TEST PROCEDURE	Ediz.: <b>2</b> Data: <b>16/07/2009</b> Issue:
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## 18.4 VIBRATION TEST PROCEDURE (STEP BY STEP)

This paragraph explains all the procedures that shall be performed on the model.  
Each test activity is defined in sequence and task by task, including test levels to be used and measurement recording to be made.

In the sequence procedure is also contained the statement that the test article shall be tested in accordance with the approved procedure to be signed and dated by Test Conductor, Quality Assurance Representative and Customer Representative (where applicable).

Figure below shows the screw ID connecting the I/F Plate to the PDS unit

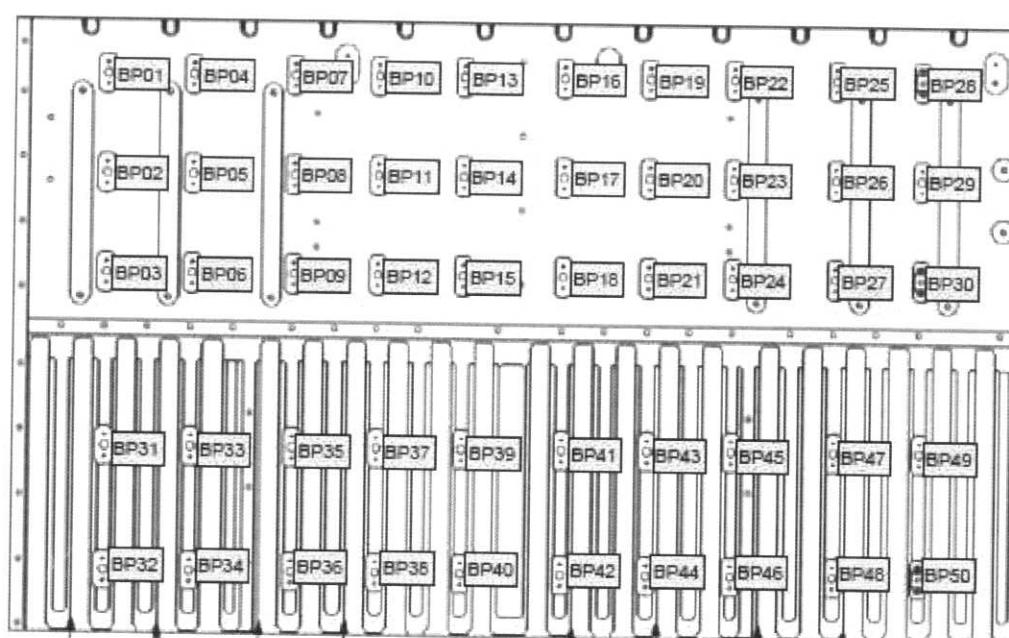


Fig 18-2 - PDS-I/F Plate Screw ID

The Running Torque (Locking Torque) of each screws shall be measured verifying if it is into the Running Torque Limits. The Final Torque considered to tighten the screw shall be calculated summing the measured running torque and the maximum seating torque.

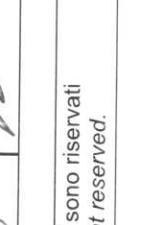
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See. RVS-01

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PART	SCREW ID	BOLT SIZE	Running Torque Limits [Nm]	Measured Running Torque [Nm]	Required Seating Torque limits [Nm]	Final Integration		PA Signature	Remarks
						Max	Min		
<b>BASEPLATE</b>									
BP1	NAS1351N3-10	2 ÷ 0.2	0,4	3,2 ÷ 2,9	3,4	30/7/2009	SD		31/8/2009
BP2	NAS1351N3-10	2 ÷ 0.2	0,3	3,2 ÷ 2,9	3,3	30/7/2009	SD		31/8/2009
BP3	NAS1351N3-10	2 ÷ 0.2	0,3	3,2 ÷ 2,9	3,3	30/7/2009	SD		31/8/2009
BP4	NAS1351N3-10	2 ÷ 0.2	0,4	3,2 ÷ 2,9	3,4	30/7/2009	SD		31/8/2009
BP5	NAS1351N3-10	2 ÷ 0.2	0,4	3,2 ÷ 2,9	3,4	30/7/2009	SD		31/8/2009
BP6	NAS1351N3-10	2 ÷ 0.2	0,5	3,2 ÷ 2,9	3,5	30/7/2009	SD		31/8/2009
BP7	NAS1351N3-10	2 ÷ 0.2	0,5	3,2 ÷ 2,9	3,5	30/7/2009	SD		31/8/2009
BP8	NAS1351N3-10	2 ÷ 0.2	0,4	3,2 ÷ 2,9	3,4	30/7/2009	SD		31/8/2009

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BP9	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 4	3.2 ÷ 2.9	3,4	30/7/2009	3/8/2009
BP10	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 7	3.2 ÷ 2.9	3,7	30/7/2009	3/8/2009
BP11	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 3	3.2 ÷ 2.9	3,3	30/7/2009	3/8/2009
BP12	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 4	3.2 ÷ 2.9	3,4	30/7/2009	3/8/2009
BP13	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 5	3.2 ÷ 2.9	3,5	30/7/2009	3/8/2009
BP14	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 4	3.2 ÷ 2.9	3,4	30/7/2009	3/8/2009
BP15	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 3	3.2 ÷ 2.9	3,3	30/7/2009	3/8/2009
BP16	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 5	3.2 ÷ 2.9	3,5	30/7/2009	3/8/2009
BP17	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 3	3.2 ÷ 2.9	3,3	30/7/2009	3/8/2009
BP18	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 3	3.2 ÷ 2.9	3,3	30/7/2009	3/8/2009
BP19	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 3	3.2 ÷ 2.9	3,3	30/7/2009	3/8/2009
BP20	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 4	3.2 ÷ 2.9	3,4	30/7/2009	3/8/2009
BP21	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 3	3.2 ÷ 2.9	3,3	30/7/2009	3/8/2009

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BP22	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 3	3.2 ÷ 2.9	3,3	30/7/2009	✓	✓	✓	3/8/2009	✓
BP23	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 3	3.2 ÷ 2.9	3,3	30/7/2009	✓	✓	✓	3/8/2009	✓
BP24	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 4	3.2 ÷ 2.9	3,4	30/7/2009	✓	✓	✓	3/8/2009	✓
BP25	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 4	3.2 ÷ 2.9	3,4	30/7/2009	✓	✓	✓	3/8/2009	✓
BP26	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 4	3.2 ÷ 2.9	3,4	30/7/2009	✓	✓	✓	3/8/2009	✓
BP27	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 4	3.2 ÷ 2.9	3,4	30/7/2009	✓	✓	✓	3/8/2009	✓
BP28	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 4	3.2 ÷ 2.9	3,4	30/7/2009	✓	✓	✓	3/8/2009	✓
BP29	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 4	3.2 ÷ 2.9	3,4	30/7/2009	✓	✓	✓	3/8/2009	✓
BP30	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 3	3.2 ÷ 2.9	3,3	30/7/2009	✓	✓	✓	3/8/2009	✓
BP31	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 3	3.2 ÷ 2.9	3,3	30/7/2009	✓	✓	✓	3/8/2009	✓
BP32	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 2	3.2 ÷ 2.9	3,2	30/7/2009	✓	✓	✓	3/8/2009	✓
BP33	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 3	3.2 ÷ 2.9	3,3	30/7/2009	✓	✓	✓	3/8/2009	✓
BP34	NAS1351N3-10	2 ÷ 0.2	O <sub>1</sub> 3	3.2 ÷ 2.9	3,3	30/7/2009	✓	✓	✓	3/8/2009	✓

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BP35	NAS1351N3- 10	2 ÷ 0.2 O,4 3.2 ÷ 2.9 3,4 30/7/2009	3/8/2009 3/8/2009
BP36	NAS1351N3- 10	2 ÷ 0.2 O,3 3.2 ÷ 2.9 3,3 30/7/2009	3/8/2009 3/8/2009
BP37	NAS1351N3- 10	2 ÷ 0.2 O,3 3.2 ÷ 2.9 3,3 30/7/2009	3/8/2009 3/8/2009
BP38	NAS1351N3- 10	2 ÷ 0.2 O,4 3.2 ÷ 2.9 3,4 30/7/2009	3/8/2009 3/8/2009
BP39	NAS1351N3- 10	2 ÷ 0.2 O,3 3.2 ÷ 2.9 3,3 30/7/2009	3/8/2009 3/8/2009
BP40	NAS1351N3- 10	2 ÷ 0.2 O,3 3.2 ÷ 2.9 3,3 30/7/2009	3/8/2009 3/8/2009
BP41	NAS1351N3- 10	2 ÷ 0.2 O,3 3.2 ÷ 2.9 3,3 30/7/2009	3/8/2009 3/8/2009
BP42	NAS1351N3- 10	2 ÷ 0.2 O,3 3.2 ÷ 2.9 3,3 30/7/2009	3/8/2009 3/8/2009
BP43	NAS1351N3- 10	2 ÷ 0.2 O,3 3.2 ÷ 2.9 3,3 30/7/2009	3/8/2009 3/8/2009
BP44	NAS1351N3- 10	2 ÷ 0.2 O,3 3.2 ÷ 2.9 3,3 30/7/2009	3/8/2009 3/8/2009
BP45	NAS1351N3- 10	2 ÷ 0.2 O,3 3.2 ÷ 2.9 3,3 30/7/2009	3/8/2009 3/8/2009
BP46	NAS1351N3- 10	2 ÷ 0.2 O,4 3.2 ÷ 2.9 3,4 30/7/2009	3/8/2009 3/8/2009
BP47	NAS1351N3- 10	2 ÷ 0.2 O,3 3.2 ÷ 2.9 3,3 30/7/2009	3/8/2009 3/8/2009

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	NAS1351N3-10	2 ÷ 0.2	Ø1,2	3,2 ÷ 2.9	3,2	30/7/2009	31/8/2009
BP48	NAS1351N3-10	2 ÷ 0.2	Ø1,2	3,2 ÷ 2.9	3,2	30/7/2009	31/8/2009
BP49	NAS1351N3-10	2 ÷ 0.2	Ø1,4	3,2 ÷ 2.9	3,4	30/7/2009	31/8/2009
BP50	NAS1351N3-10	2 ÷ 0.2	Ø1,3	3,2 ÷ 2.9	3,3	30/7/2009	31/8/2009

Tab 18-10 – Screw torque log sheet

	<b>AMS02-PDS</b>	
PDS-PFM VIBRATION TEST PROCEDURE		
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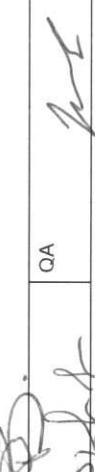
UUT DATA:	Model PFM	Item PDS	C.I. PDS 18	S/N FM 01
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE
<b>1. PRELIMINARY OPERATIONS</b>				
1.1.	RECORD THE UUT S/N	FM01	FM 01	
1.2.	TAKE THE PDS (CONNECTED TO IF PLATE) OUT OF THE CONTAINER AND PERFORM A VISUAL INSPECTION TO CHECK NO VISIBLE DAMAGE OCCURRED DURING THE TRANSPORTATION	OK	OK	
1.3.	MEASURE THE RUNNING TORQUE OF THE SCREWS CONNECTING THE I/F PLATE TO PDS AND FILL IN COLUMN "MEASURED RUNNING TORQUE" OF Tab 18-10	OK	OK	See PVS - 02
1.4.	VERIFY IF THE MEASURED RUNNING TORQUE IS INTO THE LIMITS REPORTED IN Tab 18-10	OK	OK	See PVS - 02
1.5.	FILL IN THE COLUMN "FINAL TORQUE" OF Tab 18-10 SUMMING THE MEASURED RUNNING TORQUE AND THE MAXIMUM SEATING TORQUE AND TIGHTEN THE SCREWS AT THE FINAL TORQUE.  COMPILE ALL FIELDS OF THE TABLE: - DATE - SIGNATURE - PA SIGNATURE - REMARKS (IF NEEDED)	OK	OK	See PVS - 02
<b>2. PERFORM FUNCTIONAL TEST</b>				
2.	ACCORDING TO THE FOLLOWING PROCEDURE (TO BE FILLED BY RVT TEST CONDUCTOR): TITLE: <u>AMS02-PDS PFM REDUCED FUNCTIONAL TEST PLACE DUE</u>	TEST CONDUCTOR <u>A. CARLO GAVAZZI</u>	OK	
DATE: <u>30/03/2003</u>		QA <u>AA</u>	<u>AA</u>	CUSTOMER

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CARLO GAVAZZI SPACE SpA		
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UUT DATA :	Model	PFM	Item	PDS	C.I.	PDS	18	S/N	FN 01
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE		REMARKS	
	DOC. N°:	<u>PDS-PR-CGS-020</u>							
	ISSUE:	<u>1</u>							
	DATE:	<u>10/07/09</u>							
	TEST RESULTS ARE REPORTED IN THE FOLLOWING REPORT (TO BE FILLED BY RVT TEST CONDUCTOR):								
	TITLE:	<u>AMIS02-PFM REDUCED FUNCTIONAL TEST REPORT</u>							
	DOC. N°:	<u>PDS-PR-CGS-116</u>							
	ISSUE:	<u>1</u>							
	DATE:	<u>27/7/2009</u>							

DATE: 30/09/09 TEST CONDUCTOR F. CGS A. ALVINO (SERIAL) QA 

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	CARLO GAVAZZI SPACE SpA
PDS-PFM VIBRATION TEST PROCEDURE	

UUT DATA:	Model	Item	PDS	C.I.	PDS 18	S/N	F&M 01
STEP n°	TEST SEQUENCE			EXPECTED VALUE	MEASURED VALUE	REMARKS	
3.		PDS QUALIFICATION VIBRATION TEST IN (Y AXIS)					

3.1.	UNLOADED FIXTURE RESONANCE SEARCH (Y Axis)						
3.1.1.							
3.1.2.	FIX ACCELEROMETERS ACCORDING TO Tab 18-4						

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\*\* SCREW MATERIAL AND TORQUE UNDER SERMS RESPONSIBILITY, TAKE NOTE OF MATERIAL AND NOMINAL TORQUE IN "TEST SEQUENCE" AND "EXPECTED VALUE" FIELD, MEASURED TORQUE IN "MEASURED VALUE" FIELD.  
ADD NAME AND SIGNATURE OF SERMS TEST ENGINEER.

SERMS TEST CONDUCTOR:  
NAME: A. ALVINO SIGNATURE:   
DATE 03/08/09

SCREW THE FIXTURE TO THE HEAD EXPANDER BY MEANS OF:  
EIGHT M12X25 ISO 4762 SCREWS (45 Nm \*\*)  
EIGHT M10X50 ISO4762 SCREWS (45 Nm \*\*)

QA 

DATE: 318/2009 TEST CONDUCTOR F. DIOGO (FDS) QA   
A. ALVINO (SERMS) QA 

See PVS-03 & PVS-04 CUSTOMER

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CARLO GAVAZZI SPACE SpA		
PDS-PFM VIBRATION TEST PROCEDURE		

UUT DATA:	Model	PFM	Item	PDS	C.I.	PDS 18	S/N	F1101
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE	REMARKS	
3.2.	<b>LOADED FIXTURE RESONANCE SEARCH (Y Axis)</b>						See PDS -05	
3.2.1.	REMOVE FIXTURE FROM THE HEAD EXPANDER			OK	OK	OK		
3.2.2.	CONSTRAIN THE PDS UNIT AND I/F PLATE TO THE FIXTURE BY MEANS OF: 31 (THIRTY ONE) M8X25 ISO4762 SCREWS (30 Nm**)			OK	OK	OK	** SCREW MATERIAL AND TORQUE UNDER SERMS RESPONSIBILITY, TAKE NOTE OF MATERIAL AND NOMINAL TORQUE IN "TEST SEQUENCE" AND "EXPECTED VALUE" FIELD, MEASURED TORQUE IN "MEASURED VALUE" FIELD. ADD NAME AND SIGNATURE OF SERMS TEST ENGINEER.	
3.2.3.	REMOVE SAVERS FROM THE UNIT AND PROTECT ALL CONNECTORS WITH DUST CAPS.			OK	OK	OK		
3.2.4.	CONSTRAIN THE PDS UNIT AND THE FIXTURE TO THE HEAD EXPANDER BY MEANS OF: DATE: 30/10/2018 TEST CONDUCTOR A. ALVINO (SEGU) QA			OK	OK	OK	** SCREW MATERIAL AND TORQUE UNDER SERMS RESPONSIBILITY, TAKE NOTE OF	

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UUT DATA :	Model	PFM	Item	PDS	C.I.	PDS 18	S/N	F4101
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE	REMARKS	
	EIGHT M12X25 ISO 4762 SCREWS ( <u>115</u> Nm**) EIGHT M10X50 ISO4762 SCREWS ( <u>75</u> Nm**)						MATERIAL AND NOMINAL TORQUE IN "TEST SEQUENCE" AND "EXPECTED VALUE" FIELD, MEASURED TORQUE IN "MEASURED VALUE" FIELD. ADD NAME AND SIGNATURE OF SERMS TEST ENGINEER.	
				OK	OK	OK	SERMS TEST CONDUCTOR:	
							NAME: <u>A. ALVINO</u>	
							SIGNATURE: <u>L. L.</u>	
							DATE: <u>03/08/2009</u>	
<b>3.2.5.</b>	FIX ACCELEROMETERS ACCORDING TO Tab 18-5			OK	OK	OK		
<b>3.2.6.</b>	REMOVE ALL DUST CAPS			OK	OK	OK		
<b>3.2.7.</b>	PERFORM A RESONANCE SEARCH (PROGRAM SHAKER ACCORDING TO CHAPTER 17.1.1) IF MULTIPPOINT INPUT CONTROL IS USED SELECT MAX STRATEGY			OK	OK	OK		
<b>3.2.8.</b>	VERIFY Tab 9-1			OK	OK	OK		
<b>3.2.9.</b>	ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE			OK	OK	OK		

DATE: <u>3/8/2009</u>	TEST CONDUCTOR <u>F. D'ONO (G.S.)</u>	QA <u>PA</u>
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CARLO GAVAZZI SPACE SpA		
PDS-PFM VIBRATION TEST PROCEDURE		

UUT DATA: STEP n°	Model TEST SEQUENCE	Item PDS	C.I. EXPECTED VALUE	PDS 18 MEASURED VALUE	S/N FM 01	TEST REPORT REFERENCE

3.3. PDS RESONANCE SEARCH BEFORE VIBRATION TESTS (Y AXIS)						
3.3.1.	FIX ACCELEROMETERS ACCORDING TO Tab 18-6 AND Fig 18-1	OK	OK	OK	OK	
3.3.2.	PERFORM A RESONANCE SEARCH (PROGRAM SHAKER ACCORDING TO CHAPTER 17.1.1) IF MULTIPONT INPUT CONTROL IS USED SELECT MAX STRATEGY	OK	OK	OK	OK	
3.3.3.	VERIFY Tab 9-1	OK	OK	OK	OK	
3.3.4.	ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE	OK	OK	OK	OK	
3.3.5.	VERIFY LIMIT LOAD FACTORS, USING AMPLIFICATIONS DERIVED BY THIS RUN FOR FULL LEVEL RANDOM INPUT WITH MILES FORMULA USE NOTCHING CRITERIA (PARAGRAPH 11) IF NEEDED. THE NOTCHING WILL BE CALCULATED ON THE BASE OF THE RESONANCE SEARCH RESULTS.	Load factors lower than reported into AD3 (34g Y-Direction)	OK	OK	OK	* MAX Q factor < 5 FE Auditing is conducted due to the overrun of Q = 25 NOTHING IMPLEMENTED

DATE: 03/08/2009	TEST CONDUCTOR F. Doss (AGS) A. ALVIZZO (SERVIS)	QA	
			CUSTOMER

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CARLO GAVAZZI SPACE SpA		

UUT DATA:	Model	PFM	Item	PDS	C.I.	PDS 18	S/N	FM01
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE	REMARKS	
TEST PROCEDURE REFERENCE								

<b>3.4. RANDOM VIBRATION LOW LEVEL (Y AXIS)</b>								
3.4.1.	PROGRAM SHAKER ACCORDING TO Tab 17-2 OR ACCORDING TO THE NOTCHED SPECTRUM CALCULATED ON THE BASE OF THE RESONANCE SEARCH RESULTS. IF MULTIPPOINT INPUT CONTROL IS USED SELECT MAXIMUM STRATEGY		OK	OK			See PIS - 06	
3.4.2.	CHECK IF THE CORRESPONDENT FULL LEVEL SPECTRUM IS GREATER OR EQUAL THE MEFL (Y AXIS) (SEE Tab 11-1)		OK	OK				
3.4.3.	PERFORM THE RANDOM VIBRATION TEST		OK	OK				
3.4.4.	VERIFY THAT THE MEASURED LEVEL IS IN LINE WITH THE PREDICTION. (MAX OUTPUT GRMS $\leq 1.7 \pm 10\%$ )		OK	OK			RP3,0 = 180 ± 10% RP3,0 = 159 ± 10%	
3.4.5.	VERIFY Tab 9-1		OK	OK				
3.4.6.	ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE		OK	OK				

DATE: 28/10/08 TEST CONDUCTOR: F. D'ONO (GGS) QA: M. A. ALVINO (SERV) CUSTOMER: ZZ

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	<b>AMS02-PDS</b>	
CARLO GAVAZZI SPACE SpA		
PDS-PFM VIBRATION TEST PROCEDURE		

N° Doc: Doc N°:	<b>PDS-PR-CGS-013</b>	
Ediz.: Issue:	2	Data: 16/07/2009 Date:
Pagina Page	50	di 71 of
	TEST PROCEDURE REFERENCE	
TEST REPORT REFERENCE		

UUT DATA :	Model	PFM	Item	PDS	C.I.	PDS 18	S/N	F1101
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE	REMARKS	

### 3.5. RANDOM VIBRATION FULL LEVEL (Y AXIS)

- PROGRAM SHAKER ACCORDING TO Tab 17-1 OR ACCORDING TO THE NOTCHED SPECTRUM CALCULATED ON THE BASE OF THE RESONANCE SEARCH RESULTS AND CHECKED DURING THE RANDOM LOW LEVEL TEST.  
IF MULTIPONT INPUT CONTROL IS USED SELECT MAXIMUM STRATEGY
- 3.5.1. CHECK IF THE FULL LEVEL SPECTRUM IS GREATER OR EQUAL THE MEFL (Y AXIS) (SEE Tab 11-1) *OK* *OK* See PVS - 06
- 3.5.2. PERFORM THE RANDOM VIBRATION TEST *OK* *OK*
- 3.5.3. VERIFY THAT THE MEASURED LEVEL DOERSN'T EXCEED THE LIMIT (MAX OUTPUT gRMS ≤ 6.8 ±10%) *OK* *OK* *HF3571263P7S*  
*HF3571263P7S = 6.25g RMS*
- 3.5.4. VERIFY Tab 9-1 *OK* *OK*
- 3.5.5. ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE *OK* *OK*

DATE: 18/10/09 TEST CONDUCTOR F. D'ONO (AS)  
A. ALVIANO (SELENT) *OK* QA *OK* *OK* CUSTOMER

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	<b>AMM02-PDS</b>	
PDS-PFM VIBRATION TEST PROCEDURE		
CARLO GAVAZZI SPACE SpA		

UUT DATA :	Model	PFM	Item	PDS	C.I.	PDS 18	S/N	FM 01
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE	REMARKS	
3.6.								

3.6.1.	PERFORM A RESONANCE SEARCH (PROGRAM SHAKER ACCORDING TO CHAPTER 17.1.1) IF MULTIPONT INPUT CONTROL IS USED SELECT MAX STRATEGY	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	No relevant differences with respect to the previously sine resonance search	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	** SCREW MATERIAL AND TORQUE UNDER SERMS RESPONSIBILITY, TAKE NOTE OF MATERIAL AND NOMINAL TORQUE IN "TEST SEQUENCE" AND "EXPECTED VALUE" FIELD, MEASURED TORQUE IN "MEASURED VALUE" FIELD. ADD NAME AND SIGNATURE OF SERMS TEST ENGINEER.	
3.6.2.	VERIFY Tab 9-1							
3.6.3.	ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
3.6.4.	CHECK IF FIXTURE - HEAD EXPANDER BOLTS TORQUE			(115 Nm*) 15 Nm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

DATE: 1/8/2009	TEST CONDUCTOR F. DIOG (CCS)  A. ALVINO (SEEN) 	QA 	CUSTOMER 
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	<b>AMIS02-PDS</b>	
PDS-PFM VIBRATION TEST PROCEDURE		
CARLO GAVAZZI SPACE SpA		

N° Doc: PDS-PR-CGS-013	N° Doc: ANNEX A TO Doc N°: PDS - PFM - CGS - 013
Ediz.: 2	Ediz.: 1
Issue: Pagina 52	Date: 16/07/2009 Date: 9/3/03 Pagina 17 di 35 Page
TEST PROCEDURE REFERENCE	

UUT DATA:	Model	PFM	Item	PDS	C.I.	PDS	18	S/N	FMO1
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE	REMARKS	SIGNATURE:	
								DATE 1/8/2009	
3.6.5.	PROTECT ALL CONNECTORS WITH DUST CAPS				OK	OK			
3.6.6.	REMOVE ACCELEROMETERS FROM FIXTURE AND HEAD EXPANDER IF NECESSARY.				OK	OK			
3.6.7.	REMOVE UTT+FIXTURE FROM HEAD EXPANDER				OK	OK			
3.6.8.	REMOVE FIXTURE FROM UTT				N/A	N/A	Soc. PVG - OZ		

DATE: 1/8/2009 TEST CONDUCTOR F. DUO (CCS) A. ALVIO (SERVIS) QA  CUSTOMER

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	<b>AMS02-PDS</b>	
CARLO GAVAZZI SPACE SpA		
PDS-PFM VIBRATION TEST PROCEDURE		

UUT DATA :	Model	PDS
STEP n°	TEST SEQUENCE	

UUT DATA :	Model	Item	TEST PROCEDURE REFERENCE			TEST REPORT REFERENCE
			C.I.	PDS - 18	S/N P7101	
STEP n°	TEST SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	
4.	PDS QUALIFICATION VIBRATION TEST (X AXIS)					
4.1.	UNLOADED FIXTURE RESONANCE SEARCH (X Axis)					
4.1.1.	SCREW THE ADAPTATION PLATE TO THE SLIP TABLE BY MEANS OF: SIXTEEN (16) M10X25 ISO4762 SCREWS ( <u>22</u> Nm**) <u>78x25 (8,8)</u>				** SCREW MATERIAL AND TORQUE UNDER SERMS RESPONSIBILITY, TAKE NOTE OF MATERIAL AND NOMINAL TORQUE IN "TEST SEQUENCE" AND "EXPECTED VALUE" FIELD, MEASURED TORQUE IN "MEASURED VALUE" FIELD. ADD NAME AND SIGNATURE OF SERMS TEST ENGINEER.	
4.1.2.	SCREW THE FIXTURE TO THE ADAPTATION PLATE BY MEANS OF: TWELVE (12) M12X20 ISO4762 SCREWS ( <u>  </u> Nm**) TEST CONDUCTOR <u>Carlo Gavazzi SERMS</u>		<u>See PVS -07</u>	<u>Q.A.</u>	SERMS TEST CONDUCTOR: NAME: <u>A. V. N. O.</u> SIGNATURE: <u>R. S.</u> DATE: <u>04/08/03</u>	CUSTOMER <u>M. S.</u>

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	<b>AMS02-PDS</b>	
PDS-PFM VIBRATION TEST PROCEDURE		
CARLO GAVAZZI SPACE SpA		

N° Doc: Doc N°: Ediz.: Issue:	PDS-PR-CGS-013 2	Data: Date: Pagina Page	16/07/2009 di 71 of 35	N° Doc: Doc N°: Ediz.: Issue: Pagina Page	ANNE X A TQ PDS - P - CGS - 013 Data: 9/3/09 di 35
TEST PROCEDURE REFERENCE					
UUT DATA :	Model	Item	C.I.	S/N	TEST REPORT REFERENCE
STEP n°	TEST SEQUENCE		PDS 8	PIN 91	
			EXPECTED VALUE	MEASURED VALUE	REMARKS
MEASURED TORQUE IN "MEASURED VALUE" FIELD. ADD NAME AND SIGNATURE OF SERMS TEST ENGINEER.					
SERMS TEST CONDUCTOR: NAME: _____ SIGNATURE: _____ DATE: _____					
4.1.3.	FIX ACCELEROMETERS ACCORDING TO Tab 18-1			OK	OK
4.1.4.	PERFORM A RESONANCE SEARCH (PROGRAM SHAKER ACCORDING TO CHAPTER 17.1.1 ) IF MULTIPONT INPUT CONTROL IS USED SELECT MAX STRATEGY			N/A	N/A <i>See PVS-07</i>
4.1.5.	ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE			N/A	N/A <i>See PVS-07</i>
4.1.6.	REMOVE IF NECESSARY THE ACCELEROMETERS			N/A	N/A <i>See PVS-07</i>

DATE: 01/08/2009	TEST CONDUCTOR ALESSANDRO CAVAZZI	QA 
CUSTOMER		

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	<b>AMS02-PDS</b>	
PDS-PFM VIBRATION TEST PROCEDURE		
CARLO GAVAZZI SPACE SpA		

UUT DATA:	Model	Item	PDS	C.I.	PDS 18	S/N	FM01
STEP n°	TEST SEQUENCE			EXPECTED VALUE	MEASURED VALUE	REMARKS	
4.2.	<b>LOADED FIXTURE RESONANCE SEARCH (X Axis)</b>					<i>See PVS - 07</i>	

4.2.1.	REMOVE FIXTURE FROM THE ADAPTATION PLATE	N/A	N/A	<i>See PVS - 07</i>	<p>** SCREW MATERIAL AND TORQUE UNDER SERMS RESPONSIBILITY. TAKE NOTE OF MATERIALA AND NOMINAL TORQUE IN "TEST SEQUENCE" AND "EXPECTED VALUE" FIELD. MEASURED TORQUE IN "MEASURED VALUE" FIELD.</p> <p>ADD NAME AND SIGNATURE OF SERMS TEST ENGINEER.</p>		
4.2.2.	CONSTRAIN THE PDS UNIT AND I/F PLATE TO THE FIXTURE BY MEANS OF:31 (THIRTY ONE) M8X25 ISO4762 SCREWS ( <u>  </u> Nm**)	<i>See PVS - 07</i>	<i>See PVS - 07</i>		<p>SERMS TEST CONDUCTOR:</p> <p>NAME: _____</p> <p>SIGNATURE: _____</p> <p>DATE: _____</p>		
4.2.3.	CONSTRAIN THE PDS UNIT AND THE FIXTURE TO THE ADAPTATION PLATE BY MEANS OF: TWELVE (12) M12X20 ISO4762 SCREWS ( <u>115</u> Nm**) (12.5)	<i>OK</i>	<i>OK</i>		<p>** SCREW MATERIAL AND TORQUE UNDER SERMS RESPONSIBILITY. TAKE NOTE OF MATERIALA AND NOMINAL TORQUE IN "TEST SEQUENCE" AND "EXPECTED VALUE" FIELD.</p>		

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	<b>AMIS02-PDS</b>	
CARLO GAVAZZI SPACE SpA		
PDS-PFM VIBRATION TEST PROCEDURE		

UUT DATA :	Model	PFM	Item	PDS	C.I.	PDS 18	SIN	F401
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE	REMARKS	

N° Doc: Doc N°: Ediz.: Issue:	PDS-PR-CGS-013 2	Data: Date: Pagina Page	16/07/2009 di 71 of 35	TEST PROCEDURE REFERENCE	N° Doc: Doc N°: Ediz.: Issue:	Annex A TO PDS-CGS-118 Data: Date: Pagina Page	TEST REPORT REFERENCE
SERMS TEST CONDUCTOR:					NAME: A - ALVINO		
					SIGNATURE: 		
					DATE 04-07-09		
4.2.4.	FIX ACCELEROMETERS ACCORDING TO Tab 18-2			OK	OK		
4.2.5.	REMOVE ALL DUST CAPS			OK	OK		
4.2.6.	PERFORM A RESONANCE SEARCH (PROGRAM SHAKER ACCORDING TO CHAPTER 17.1.1) IF MULTIPPOINT INPUT CONTROL IS USED SELECT MAX STRATEGY			OK	OK		
4.2.7.	VERIFY Tab 9-1			OK	OK		
4.2.8.	ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE			OK	OK		

DATE: 04/08/09	TEST CONDUCTOR A. ALVINO (SEN)	QA 
		CUSTOMER 

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	<b>AMIS02-PDS</b>	
CARLO GAVAZZI SPACE SpA		
PDS-PFM VIBRATION TEST PROCEDURE		

UUT DATA :	Model	PFM	Item	PDS	C.I.	PDS 18	S/N	FMOD				
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE	REMARKS					
<b>4.3. PDS RESONANCE SEARCH BEFORE VIBRATION TESTS (X AXIS)</b>												

4.3.1.	FIX ACCELEROMETERS ACCORDING TO Tab 18-3 AND Fig 18-1	OK	OK					
4.3.2.	PERFORM A RESONANCE SEARCH (PROGRAM SHAKER ACCORDING TO CHAPTER 17.1.1) IF MULTIPPOINT INPUT CONTROL IS USED SELECT MAX STRATEGY	OK	OK					
4.3.3.	VERIFY Tab 9-1	OK	OK					
4.3.4.	ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE	OK	OK					
4.3.5.	VERIFY LIMIT LOAD FACTORS, USING AMPLIFICATIONS DERIVED BY THIS RUN FOR FULL LEVEL RANDOM INPUT WITH MILES FORMULA USE NOTHING CRITERIA (PARAGRAPH 11) IF NEEDED. THE NOTCHING WILL BE CALCULATED ON THE BASE OF THE RESONANCE SEARCH RESULTS.	Load factors lower than that reported into AD3 (19g X-Direction)	OK					

DATE: 06/08/08 TEST CONDUCTOR F. DNO (CGS) A. ACQUADRO (Seors) M.R QA  CUSTOMER 

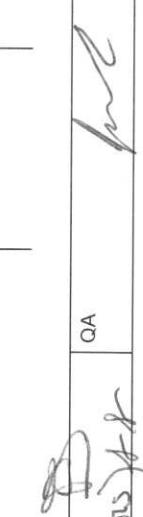
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	<b>AMS02-PDS</b>	N° Doc: Doc N°: Ediz.: Issue: Pagina Page	PDS-PR-CGS-013 2 16/07/2009 58 di 71 TEST PROCEDURE REFERENCE	N° Doc: Doc N°: Ediz.: Issue: Pagina Page	A/N/E X A PDS-RP-QS-118 1 23 di 35 TEST REPORT REFERENCE
CARLO GAVAZZI SPACE SpA			PDS-PFM VIBRATION TEST PROCEDURE		

UUT DATA:	Model	PFM	Item	C.I.	PDS 18	S/N	FM01
STEP n°	TEST SEQUENCE			EXPECTED VALUE	MEASURED VALUE	REMARKS	

#### 4.4. RANDOM VIBRATION LOW LEVEL (X AXIS)

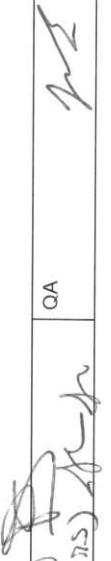
- 4.4.1. PROGRAM SHAKER ACCORDING TO Tab 17-2 OR ACCORDING TO THE NOTCHED SPECTRUM CALCULATED ON THE BASE OF THE RESONANCE SEARCH RESULTS. IF MULTIPPOINT INPUT CONTROL IS USED SELECT MAXIMUM STRATEGY  OK
- 4.4.2. CHECK IF THE CORRESPONDENT FULL LEVEL SPECTRUM IS GREATER OR EQUAL THE MEFL (X AXIS) (SEE Tab 11-1)  OK
- 4.4.3. PERFORM THE RANDOM VIBRATION TEST  OK
- 4.4.4. VERIFY THAT THE MEASURED LEVEL IS IN LINE WITH THE PREDICTION. (MAX OUTPUT gRMS  $\leq 1.7 \pm 10\%$ )  OK MAX OUTPUT gRMS  $\leq 1.7 \pm 10\%$   $\frac{OK}{OK}$  See PVS-c8
- 4.4.5. VERIFY Tab 9-1  OK
- 4.4.6. ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE  OK  OK

DATE: 04/08/2009	TEST CONDUCTOR F. DIO (CGS) A. CALVO (SERV) J.R.	QA		CUSTOMER
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	<b>AMM02-PDS</b>	
CARLO GAVAZZI SPACE SpA		
PDS-PFM VIBRATION TEST PROCEDURE		

UUT DATA :	Model	PFM	Item	PDS	C.I.	PDS	18	S/N	FM 01
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE		TEST REPORT REFERENCE	
4.5.	<b>RANDOM VIBRATION FULL LEVEL (X AXIS)</b>								

4.5.1.	PROGRAM SHAKER ACCORDING TO Tab 17-1 OR ACCORDING TO THE NOTCHED SPECTRUM CALCULATED ON THE BASE OF THE RESONANCE SEARCH RESULTS AND CHECKED DURING THE RANDOM LOW LEVEL TEST. IF MULTIPPOINT INPUT CONTROL IS USED SELECT MAXIMUM STRATEGY	OK	OK	
4.5.2.	CHECK IF THE FULL LEVEL SPECTRUM IS GREATER OR EQUAL THE MEFL (X AXIS) (SEE Tab 11-1)	OK	OK	
4.5.3.	PERFORM THE RANDOM VIBRATION TEST	OK	OK	
4.5.4.	VERIFY THAT THE MEASURED LEVEL DOERSN'T EXCEED THE LIMIT (MAX OUTPUT gRMS ≤ $6.8 \pm 10\%$ )	MAX gRMS ≤ $6.8 \pm 10\%$	RPS, =7, SB45	see PVS -08
4.5.5.	VERIFY Tab 9-1	OK	OK	
4.5.6.	ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE	OK	OK	

DATE: 06/08/2023	TEST CONDUCTOR: F. Di Dio (AgS) A. Acciari (Seens) A. M. J.	QA	CUSTOMER: 
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	<b>AMIS02-PDS</b>	
PDS-PFM VIBRATION TEST PROCEDURE		
CARLO GAVAZZI SPACE SpA		

UUT DATA :	Model	PFM	Item	PDS	C.I.	PDS 18	S/N	FM 01
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE	REMARKS	
4.6.	<b>RESONANCE SEARCH AFTER VIBRATION TESTS (X AXIS)</b>							

4.6.1.	PERFORM A RESONANCE SEARCH (PROGRAM SHAKER ACCORDING TO CHAPTER 17.1.1) IF MULTIPONT INPUT CONTROL IS USED SELECT MAX STRATEGY			OK	OK			
4.6.2.	VERIFY Tab 9-1			No relevant differences with respect to the previously sine resonance search	OK			
4.6.3.	ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE			OK	OK			
4.6.4.	CHECK IF FIXTURE – ADAPTATION PLATE BOLTS TORQUE			( 15 Nm** )			** SCREW MATERIAL AND TORQUE UNDER SERMS RESPONSIBILITY, TAKE NOTE OF MATERIAL AND NOMINAL TORQUE IN "TEST SEQUENCE" AND "EXPECTED VALUE" FIELD, MEASURED TORQUE IN "MEASURED VALUE" FIELD. ADD NAME AND SIGNATURE OF SERMS TEST ENGINEER.	

DATE: 04/08/09	TEST CONDUCTOR F. DUO A. ALVINO SERVISIN L.	QA		CUSTOMER
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PDS-PFM VIBRATION TEST PROCEDURE		

		N° Doc: Doc N°: Ediz.: Issue:		N° Doc: Doc N°: Ediz.: Issue:	
		PDS-PR-CGS-013 2 Data: Date: Pagina Page		PDS-PR-CGS-013 1 Data: Date: Pagina Page	
		16/07/2009 61 di of		16/07/2009 26 di 35	
		TEST PROCEDURE REFERENCE			
UUT DATA :	Model	PFM	Item	PDS	S/N FM 04
STEP n°	TEST SEQUENCE		C.I.	PDS 18	
			EXPECTED VALUE	MEASURED VALUE	REMARKS
					SIGNATURE:
					OK/08/08
					DATE
<b>4.6.5.</b>	PROTECT ALL CONNECTORS WITH DUST CAPS		OK	OK	
<b>4.6.6.</b>	REMOVE ACCELEROMETERS FROM FIXTURE AND ADAPTATION PLATE IF NECESSARY.		OK	OK	
<b>4.6.7.</b>	REMOVE UTT+FIXTURE FROM ADAPTATION PLATE		OK	OK	
<b>4.6.8.</b>	REMOVE FIXTURE FROM UTT		N/A	N/A	See PVS - o)
<b>4.6.9.</b>	REMOVE ADAPTATION PLATE FROM SLIP TABLE		OK	OK	

DATE: 05/08/08 TEST CONDUCTOR  QA  CUSTOMER

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 <b>CARLO GAVAZZI</b>	<h1><b>AMIS02-PDS</b></h1> <p>PDS-PFM VIBRATION TEST PROCEDURE</p> <p>CARLO GAVAZZI SPACE SpA</p>
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UUT DATA :		Model	PFM	Item	PDS	c.l.	PDS 18	S/N	FM 01
STEP n°	TEST SEQUENCE					EXPECTED VALUE	MEASURED VALUE	REMARKS	
5.	PDS QUALIFICATION VIBRATION TEST (Z AXIS)								

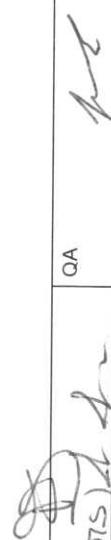
<p><b>5.1. UNLOADED FIXTURE RESONANCE SEARCH (Z Axis)</b></p> <p>SCREW THE ADAPTATION PLATE TO THE SLIP TABLE BY MEANS OF: SIXTEEN (16) M10x25 ISO4762 SCREWS (<u>22</u> Nm**) <math>18 \times 25 (8.8)</math></p> <p>5.1.2. SCREW THE FIXTURE TO THE ADAPTATION PLATE BY MEANS OF: TWELVE (12) M12X20 ISO4762 SCREWS (<u>Nm**</u>)</p> <p>DATE: <u>05/08/09</u> TEST CONDUCTOR <u>F. D'Urso (C.G.S.)</u> <u>D. L.</u> <u>A. Alù (S.R.)</u></p>	<p>N° Doc: A/NEX-A Doc N°: PDS-PR-CGS-013 Ediz.: 2 Issue: Pagina 62 di 71 Page</p> <p>Data: 16/07/2009 Date: 1 Pagina 27 di 35 Page</p> <p>TEST PROCEDURE REFERENCE</p>	<p>N° Doc: A/NEX-A Doc N°: PDS-PR-CGS-013 Ediz.: 1 Issue: Pagina 27 di 35 Page</p> <p>Data: 05/08/09 Date: 1 Pagina 27 di 35 Page</p> <p>TEST REPORT REFERENCE</p>	<p>** SCREW MATERIAL AND TORQUE UNDER SERMS RESPONSIBILITY, TAKE NOTE OF MATERIAL AND NOMINAL TORQUE IN "TEST SEQUENCE" AND "EXPECTED VALUE" FIELD. ADD NAME AND SIGNATURE OF SERMS TEST ENGINEER.</p> <p>SERMS TEST CONDUCTOR:</p> <p>NAME: <u>A. Alù (S.R.)</u> SIGNATURE: <u>05/08/09</u> DATE</p> <p>** SCREW MATERIAL AND TORQUE UNDER SERMS RESPONSIBILITY, TAKE NOTE OF MATERIAL AND NOMINAL TORQUE IN "TEST SEQUENCE" AND "EXPECTED VALUE" FIELD.</p> <p>CUSTOMER</p>
	<p>** SCREW MATERIAL AND TORQUE UNDER SERMS RESPONSIBILITY, TAKE NOTE OF MATERIAL AND NOMINAL TORQUE IN "TEST SEQUENCE" AND "EXPECTED VALUE" FIELD.</p> <p>CUSTOMER</p>	<p>** SCREW MATERIAL AND TORQUE UNDER SERMS RESPONSIBILITY, TAKE NOTE OF MATERIAL AND NOMINAL TORQUE IN "TEST SEQUENCE" AND "EXPECTED VALUE" FIELD.</p> <p>CUSTOMER</p>	

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PDS-PFM VIBRATION TEST PROCEDURE		

		N° Doc: Doc N°: Ediz.: Issue:	PDS-PR-CGS-013 2 Data: 16/07/2009 Pagina 63 di 71	N° Doc: Doc N°: Ediz.: Issue:
		Pagina Page	TEST PROCEDURE REFERENCE	Data: Date: Pagina Page di of
		TEST REPORT REFERENCE		

UUT DATA :	Model	PFM	Item	PDS	C.I.	PDS 18	S/N	PM01
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE	REMARKS	
							MEASURED TORQUE IN "MEASURED VALUE" FIELD. ADD NAME AND SIGNATURE OF SERMS TEST ENGINEER.	
							SERMS TEST CONDUCTOR:  NAME: _____  SIGNATURE: _____  DATE _____	
<b>5.1.3.</b>	FIX ACCELEROMETERS ACCORDING TO Tab 18-7				or	or		
<b>5.1.4.</b>	PERFORM A RESONANCE SEARCH (PROGRAM SHAKER ACCORDING TO CHAPTER 17.1.1 ) IF MULTIPONT INPUT CONTROL IS USED SELECT MAX STRATEGY				N/A	N/A	<i>See PMS - 03</i>	
<b>5.1.5.</b>	ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE				N/A	N/A	" "	
<b>5.1.6.</b>	REMOVE IF NECESSARY THE ACCELEROMETERS				N/A	N/A	" "	

DATE: 05/08/09	TEST CONDUCTOR A ALUINO (SEZIONE 2)	QA		CUSTOMER
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	<b>AMS02-PDS</b>	
CARLO GAVAZZI SPACE SpA		
PDS-PFM VIBRATION TEST PROCEDURE		

UUT DATA:	Model	PFM	Item	PDS	C.I.	PDS	18	S/N	F1104
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE	REMARKS		
5.2.	<b>LOADED FIXTURE RESONANCE SEARCH (Z Axis)</b>						See PVS ~ 05		

5.2.1.	REMOVE FIXTURE FROM THE ADAPTATION PLATE				P/A	N/A	See PVS ~ 05		
5.2.2.	CONSTRAIN THE PDS UNIT AND I/F PLATE TO THE FIXTURE BY MEANS OF: 31 (THIRTY ONE) M8X25 ISO4762 SCREWS ( _____ Nm**)								
5.2.3.	CONSTRAIN THE PDS UNIT AND THE FIXTURE TO THE ADAPTATION PLATE BY MEANS OF: TWELVE (12) M12X20 ISO4762 SCREWS ( 115 Nm**)								
DATE: 04-05/08/09	TEST CONDUCTOR F. DIO - A. ALVIANO (SERVIS)				OK	OK	QA	DATE: 04-05/08/09	CUSTOMER N/A

TEST PROCEDURE REFERENCE

TEST REPORT REFERENCE

ANNEX A TEST  
PDS - PFM - CGS ~ 05  
Data: 05/08/09  
Page 29 di 35

\*\* SCREW MATERIAL AND TORQUE UNDER SERMS RESPONSIBILITY. TAKE NOTE OF MATERIAL AND NOMINAL TORQUE IN "TEST SEQUENCE" AND "EXPECTED VALUE" FIELD, MEASURED TORQUE IN "MEASURED VALUE" FIELD.  
ADD NAME AND SIGNATURE OF SERMS TEST ENGINEER.

SERMS TEST CONDUCTOR:  
NAME: \_\_\_\_\_  
SIGNATURE: \_\_\_\_\_  
DATE: \_\_\_\_\_

\*\* SCREW MATERIAL AND TORQUE UNDER SERMS RESPONSIBILITY. TAKE NOTE OF MATERIAL AND NOMINAL TORQUE IN "TEST SEQUENCE" AND "EXPECTED VALUE" FIELD, MEASURED TORQUE IN "MEASURED VALUE" FIELD.  
ADD NAME AND SIGNATURE OF SERMS TEST ENGINEER.

SERMS TEST CONDUCTOR:  
NAME: \_\_\_\_\_  
SIGNATURE: \_\_\_\_\_  
DATE: \_\_\_\_\_

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	<b>AMIS02-PDS</b>	
CARLO GAVAZZI SPACE SpA		
PDS-PFM VIBRATION TEST PROCEDURE		

		N° Doc: Doc N°: Ediz.: Issue: Pagina Page	PDS-PR-CGS-013 2 Date: 16/07/2009 di 65 of 71	N° Doc: Doc N°: Ediz.: Issue: Pagina Page	A PDS-PR-CGS-013 Data: / / 3/9/09 di 35
		TEST PROCEDURE REFERENCE		TEST REPORT REFERENCE	
UUT DATA:	Model	PFM	Item	PDS	C.I.
STEP n°	TEST SEQUENCE			EXPECTED VALUE	MEASURED VALUE
					FIELD. ADD NAME AND SIGNATURE OF SERMS TEST ENGINEER.
					SERMS TEST CONDUCTOR: NAME: <u>A. ALESSANDRA</u> SIGNATURE: <u>A. Alessandria</u> DATE: <u>06/08/09</u>
<b>5.2.4.</b>	FIX ACCELEROMETERS ACCORDING TO Tab 18-8				<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
<b>5.2.5.</b>	REMOVE ALL DUST CAPS.				<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
<b>5.2.6.</b>	PERFORM A RESONANCE SEARCH (PROGRAM SHAKER ACCORDING TO CHAPTER 17.1.) IF MULTIPPOINT INPUT CONTROL IS USED SELECT MAX STRATEGY				<input checked="" type="checkbox"/>
<b>5.2.7.</b>	VERIFY Tab 9-1				<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
<b>5.2.8.</b>	ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE				<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>

DATE: 06-08-09	TEST CONDUCTOR ALESSANDRA SERVISI	TEST CONDUCTOR F. D'ONO (CGS)	QA 	CUSTOMER 
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	<b>AMS02-PDS</b>	
CARLO GAVAZZI SPACE SpA		
PDS-PFM VIBRATION TEST PROCEDURE		

N° Doc: Doc N°: Ediz.: Issue:	PDS-PR-CGS-013	N° Doc: Doc N°: Ediz.: Issue:	AnnEX A PDS - PFM - CGS - 118 Data: 9/9/09 1 Pagina 31 di 35
2	Data: 16/07/2009	Page	TEST REPORT REFERENCE
Pagina Page	66 di 71		

UUT DATA :	Model	PFM	Item	PDS	C.I.	PDS 18	S/N	FMS 01
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE	REMARKS	
5.3.	<b>PDS RESONANCE SEARCH BEFORE VIBRATION TESTS (Z AXIS)</b>						See PMS - 05	

5.3.1.	FIX ACCELEROMETERS ACCORDING TO Tab 18-9 AND Fig 18-1	OK	OK
5.3.2.	PERFORM A RESONANCE SEARCH (PROGRAM SHAKER ACCORDING TO CHAPTER 17.1.1) IF MULTIPoint INPUT CONTROL IS USED SELECT MAX STRATEGY	OK	OK
5.3.3.	VERIFY Tab 9-1	OK	OK
5.3.4.	ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE	OK	OK
5.3.5.	VERIFY LIMIT LOAD FACTORS, USING AMPLIFICATIONS DERIVED BY THIS RUN FOR FULL LEVEL RANDOM INPUT WITH MILES FORMULA USE NOTHING CRITERIA (PARAGRAPH 11) IF NEEDED. THE NOTCHING WILL BE CALCULATED ON THE BASE OF THE RESONANCE SEARCH RESULTS.	Load factors lower than reported AD3 (25g Z-Direction)	* MAX Q Factor < 5 FE exceeding is considered due to the amplitude of Q = 25

DATE: 05/08/09	TEST CONDUCTOR F. DIO (C4S) A. ALVINO (SERVIS) L.	QA	✓	CUSTOMER
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	<b>AMS02-PDS</b>	
	PDS-PFM VIBRATION TEST PROCEDURE	
CARLO GAVAZZI SPACE SpA		

N° Doc: Doc N°: Ediz.: Issue:	PDS-PR-CGS-013	N° Doc: Doc N°: Ediz.: Issue:	Annex A-10 PDS - PFS - GS-10 Data: 29/09 Page 32 di 35
2	Date: 16/07/2009	1	
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TEST REPORT REFERENCE			

STEP n°	Model	PFM	Item	PDS	C.I.	PDS 18	S/N	FM01
TEST SEQUENCE						EXPECTED VALUE	MEASURED VALUE	REMARKS

5.4. RANDOM VIBRATION LOW LEVEL (Z AXIS)								
<b>5.4.1.</b>					OK	OK	SEE PVS-10	
<b>5.4.2.</b>					OK	OK		
<b>5.4.3.</b>					OK	OK		
<b>5.4.4.</b>					MAX OUTPUT gRMS ≤ 1.7 ±10%	TP3=1,66dB TP4=1,67 TPC=1,82		
<b>5.4.5.</b>					OK	OK		
<b>5.4.6.</b>					OK	OK		

DATE: 05/08/09	TEST CONDUCTOR F. DUO A. ALVINO (SE215)	TEST CONDUCTOR F. DUO A. ALVINO (SE215) 	QA 	CUSTOMER 
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 <b>CARLO GAVAZZI</b>	<h1><b>AMS02-PDS</b></h1> PDS-PFM VIBRATION TEST PROCEDURE
AMS02-PDS - PDS-PFM VIBRATION TEST PROCEDURE	

UUT DATA :	Model	PFM	Item	PDS	C.I.	PDS 18	S/N	M01
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE	REMARKS	
5.5.	<b>RANDOM VIBRATION FULL LEVEL (Z AXIS)</b>							

5.5.1. PROGRAM SHAKER ACCORDING TO Tab 17-1 OR ACCORDING TO THE NOTCHED SPECTRUM CALCULATED ON THE BASE OF THE RESONANCE SEARCH RESULTS AND CHECKED DURING THE RANDOM LOW LEVEL TEST. IF MULTIPORT INPUT CONTROL IS USED SELECT MAXIMUM STRATEGY	OK	OK	S E E P M S - 10
5.5.2. CHECK IF THE FULL LEVEL SPECTRUM IS GREATER OR EQUAL THE MEFL (Z AXIS) (SEE Tab 11-1)	OK	OK	
5.5.3. PERFORM THE RANDOM VIBRATION TEST	OK	OK	
5.5.4. VERIFY THAT THE MEASURED LEVEL DOERSN'T EXCEED THE LIMIT (MAX OUTPUT gRMS ≤ 6.8 ±10%)	OK	OK	MAX OUTPUT gRMS ≤ 6.8 ±10% $11032 = 6.47961 \text{ mV}_g = 6.75975 \text{ g RMS}$ See PMS-11
5.5.5. VERIFY Tab 9-1	OK	OK	$11032 = 5,68275 \text{ mV}_g = 756$ <del>see</del>
5.5.6. ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE	OK	OK	

DATE: 05/08/09	TEST CONDUCTOR F. D'UO (C.G.S)	A. ACQUAVIVA (C.S.E.R.T.)	QA ✓	✓	CUSTOMER
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CARLO GAVAZZI SPACE SpA		
PDS-PFM VIBRATION TEST PROCEDURE		

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TEST PROCEDURE REFERENCE			

UUT DATA :	Model	PFM	Item	PDS	C.I.	PDS 18	S/N	PM01
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE	REMARKS	

#### 5.6. RESONANCE SEARCH AFTER VIBRATION TESTS (Z AXIS)

5.6.1. IF MULTIPONT INPUT CONTROL IS USED SELECT MAX STRATEGY	<i>OK</i>	<i>OK</i>	No relevant differences with respect to the previously sine resonance search	<i>OK</i>	<i>OK</i>	(115 Nm**)	** SCREW MATERIAL AND TORQUE UNDER SERMS RESPONSIBILITY, TAKE NOTE OF MATERIAL AND NOMINAL TORQUE IN "TEST SEQUENCE" AND "EXPECTED VALUE" FIELD, MEASURED TORQUE IN "MEASURED VALUE" FIELD. ADD NAME AND SIGNATURE OF SERMS TEST ENGINEER. SERMS TEST CONDUCTOR: NAME: <i>A. Alvino</i>	
5.6.2. VERIFY Tab 9-1								
5.6.3. ANNEX TO THE TEST REPORT THE RECORDING CHART AND SAVE FILE								
5.6.4. CHECK IF FIXTURE – ADAPTATION PLATE BOLTS TORQUE								
DATE: 08/08	TEST CONDUCTOR	F. Divo	CGS	A. Alvino (SERMS)	QA	<i>✓</i>	CUSTOMER	

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CARLO GAVAZZI SPACE SpA		Doc N°:	2	Data: <b>16/07/2009</b>	Doc N°:	<b>RQS-1</b>
PDS-PFM VIBRATION TEST PROCEDURE		Ediz.:		Date: <b>8/9/09</b>	Ediz.:	<b>1</b>
PDS-PFM VIBRATION TEST PROCEDURE		Issue:		Date: <b>8/9/09</b>	Issue:	<b>1</b>
		Pagina	<b>70</b>	di	Pagina	<b>35</b>
		Page	<b>71</b>	of	Page	<b>35</b>
		TEST PROCEDURE REFERENCE		TEST REPORT REFERENCE		
UUT DATA :	Model	PFM	Item	PDS	C.I.	PDS 18
STEP n°	TEST SEQUENCE				EXPECTED VALUE	MEASURED VALUE
					SIGNATURE:	
					DATE	<b>05/08/09</b>
5.6.5.	PROTECT ALL CONNECTORS WITH DUST CAPS			OK	OK	
5.6.6.	REMOVE ACCELEROMETERS FROM FIXTURE AND ADAPTATION PLATE IF NECESSARY.			OK	OK	
5.6.7.	REMOVE UTT+FIXTURE FROM ADAPTATION PLATE AND INSTALL SAVERS ON UNIT			OK	OK	
5.6.8.	REMOVE FIXTURE FROM UTT			OK	OK	
5.6.9.	REMOVE ADAPTATION PLATE FROM SLIP TABLE			OK	OK	
5.6.10.	REMOVE DUST CAPS AND INSTALL ALL SAVERS BEFORE ELECTRICAL TEST		N. A.	N. A.	N. A.	

DATE: <b>05/08/09</b>	TEST CONDUCTOR <b>F. DUO (CGS) A. Acquicciarsi</b>	QA <b>ZZ</b>
CUSTOMER		

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